

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

✓  
Cancel claims 1- 22.

Add new claims as follows:

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23. (New) A memory for storing data for access by a longest prefix match program being executed on a data processing system, comprising:

a data structure stored in the memory, the data structure including information resident in a database used by the longest prefix match program and including:

a large table at a root, the root branching to nodes containing small trie tables, each trie table addressed by a span of Internet protocol (IP) address bits to locate an indexed trie entry, the indexed trie entry including a route pointer and a trie pointer.

24. (New) The memory of claim 23 wherein each of the small trie tables comprises:

prefix match fields for each indexed entry;

a population count of pointers; and

hidden prefix entries.

25. (New) The memory of claim 24 wherein the each of the hidden prefix entries hold shorter prefix entry pointers.

26. (New) The memory of claim 24 wherein the small trie tables are stored in a static random access memory (SRAM) and used for route lookups, route adds and route deletes.

27. (New) The memory of claim 24 wherein the indexed trie entry is a 32-bit longword.

28. (New) A method of searching a database for a prefix representing a destination address comprising:

reading a data structure stored in a memory, the data structure comprising a large table at a root, the root branching to two nodes containing small trie tables, each trie table addressed by a span of Internet protocol (IP) address bits to locate an indexed trie entry, the indexed trie entry including a route pointer and a trie pointer;

traversing in parallel the two trie tables of trees to find a match of an trie entry to the prefix.

29. (New) The method of claim 28 wherein the route pointer represents the destination address and the trie pointer points to a next small trie table.

30. (New) The method of claim 28 wherein the small trie tables comprise:  
prefix match fields for indexed table entries;  
a population count of pointers; and  
hidden prefix entries that hold shorter prefix route entry pointers.

31. (New) The method of claim 28 further comprising reporting a non-match if the prefix does not match an entry.

32. (New) The method of claim 28 wherein a first large table is a single 64k entry table that is indexed by bits 31:16 of an internet protocol (IP) address.

33. (New) The method of claim 28 wherein a second large table is a single 256 entry, table that is indexed by bits 31:24 of an internet protocol (IP) address.

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Serial No. : 09/608,354  
Filed : June 29, 2000  
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34. (New) The method of claim 32 wherein the small tables are dynamically allocated and comprise:

a tree with each node representing 4 bits of addresses covering an extension of 1-4 bits of a prefix entry from a previous tree.

35. (New) The method of claim 33 wherein the small tables are dynamically allocated and comprise:

a tree with each node representing 4 bits of addresses covering an extension of 1-4 bits of a prefix entry from a previous tree.

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